

## KNOWLEDGE AND ATTITUDE: IMPORTANT COMPONENTS IN DIABETES EDUCATION

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*This descriptive cross-sectional study was conducted from March to November 2007 at a research and community services center of a Brazilian university. It aimed to explore the knowledge and attitude of people with diabetes mellitus who were attending a diabetes self-care education program. The sample was composed of 82 adults with diabetes mellitus. Data were collected through the Portuguese versions of the Diabetes Knowledge Questionnaire (DKN-A) and the Diabetes Attitude Questionnaire (ATT-19). Results revealed that 78.05% of the participants obtained scores higher than eight on knowledge about diabetes, which indicates they have knowledge and understand the disease. Scores on attitude ranged from 25 to 71 suggesting difficulty in coping with the disease. We conclude that although participants obtained a good score on knowledge, their attitude did not change so as to more adequately cope with the disease.*

**DESCRIPTORS:** diabetes mellitus; nursing; knowledge; attitude

## CONOCIMIENTO Y ACTITUDES: COMPONENTES PARA LA EDUCACIÓN EN DIABETES

*Estudio transversal, realizado en un centro de investigación y extensión universitaria brasileño, en el período de marzo a noviembre de 2007. El objetivo fue verificar conocimientos y actitudes de personas con diabetes mellitus que participaban de un programa de educación en el auto cuidado en diabetes. Como método se usó una muestra constituida por 82 adultos con diabetes mellitus. Para recolección de los datos fueron utilizadas versiones portuguesas de los cuestionarios Diabetes Knowledge Questionnaire (DKN-A) y Diabetes Attitude Questionnaire (ATT-19). Los resultados mostraron que 78,05% tuvieron puntajes superiores a 8 en relación al conocimiento en diabetes, indicando conocimiento y comprensión acerca de la enfermedad. En cuanto a la actitud, los puntajes variaron entre 25 y 71 puntos, sugiriendo dificultad en el enfrentamiento de la enfermedad. Se concluye que, a pesar que los participantes obtuvieron un buen puntaje en el conocimiento, todavía así no modificaron la actitud para el enfrentamiento más adecuado de la enfermedad.*

**DESCRIPTORES:** diabetes mellitus; enfermería; conocimiento; actitud

## CONHECIMENTO E ATITUDES: COMPONENTES PARA A EDUCAÇÃO EM DIABETES

*Estudo transversal, realizado em um centro de pesquisa e extensão universitária brasileiro, no período de março a novembro de 2007. O objetivo foi verificar conhecimentos e atitudes de pessoas com diabetes mellitus que participavam de um programa de educação para o autocuidado em diabetes. Como método usou-se amostra constituída por 82 adultos com diabetes mellitus. Para coleta de dados foram utilizadas versões portuguesas dos questionários Diabetes Knowledge Questionnaire (DKN-A) e Diabetes Attitude Questionnaire (ATT-19). Os resultados mostraram que 78,05% tiveram escores superiores a 8 em relação ao conhecimento em diabetes, indicando conhecimento e compreensão acerca da doença. Quanto à atitude, os escores variaram entre 25 e 71 pontos, sugerindo dificuldade no enfrentamento da doença. Conclui-se que, apesar de os participantes terem obtido bom escore para o conhecimento, ainda assim não modificaram a atitude para o enfrentamento mais adequado da doença.*

**DESCRITORES:** diabetes mellitus; enfermagem; conhecimento; atitude

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## INTRODUCTION

Self-care education is an essential element in the treatment of a person with diabetes and its importance is acknowledged in several studies carried out in communities with different socioeconomic and cultural profiles<sup>(1-2)</sup>. Effective education of people with diabetes mellitus about self-care requires health professionals to have knowledge of psychosocial, epidemiological and physiopathological aspects of the disease in addition to pedagogical abilities, capacity to communicate, listen, understand and also to negotiate with the multiprofessional health team<sup>(3)</sup>.

Health professionals' knowledge, abilities and strategies can positively influence behavioral change in individuals with diabetes so as to adhere to diet, physical activities, monitoring blood glucose and taking oral medication and insulin, which enable adequate metabolic control<sup>(4-5)</sup>. Adherence to these measures reduces chronic complications and the need for hospitalization<sup>(6)</sup>.

A significant correlation between attitude and knowledge for people with diabetes suggests that more knowledge is associated with a predisposition to assume self-care<sup>(2)</sup>. In the particular case of diabetes management, this predisposition enables reduction of stress associated with the disease, higher receptivity to the treatment, trust of the multiprofessional team, higher self-esteem and sense of self-efficacy, and a more positive perception of one's health and social acceptance<sup>(7)</sup>.

The need to develop teaching activities and education in health that is focused on people with diabetes and their families, so as to provide knowledge and strengthen an active attitude in relation to the disease, is related to the prevention of complications through management of the disease, which allows people to live better with their condition<sup>(3,5,8)</sup>.

One of the goals of the *Programa Saúde para Todos* [Health for All Program] in 2010 is to provide formal education on diabetes self-care to 60% of individuals with diabetes, exceeding the 40% goal established in 1998. A significant deficit of knowledge and ability has been evidenced in 50% to 80% of individuals with diabetes<sup>(9)</sup>. Glycemic control, verified through hemoglobin A1c, is achieved in less than half of patients with type 2 diabetes<sup>(9)</sup>.

To implement this educative program one has to consider the gender and ethnicity or culture of the target population as well as the age and level of

education of the population<sup>(1)</sup>. The evaluation of individual characteristics of the target population is recommended for planning a diabetes education program, since age, education and socioeconomic levels are variables that influence acquisition of knowledge<sup>(2)</sup>. Characteristics such as gender and age have been the most studied ones, though association between gender and acquisition of knowledge for diabetes has not reached conclusive results<sup>(1)</sup>.

In addition, one has to know individuals' attitudes toward diabetes in order to develop their abilities to manage diabetes. This study considers attitude as a predisposition to adopt self-care actions. There are few studies focusing on the benefits of programs and educational interventions in diabetes conducted in the context of specific cultures. There is a scarcity of Brazilian studies evaluating the effect of diabetes education, especially in relation to changing attitudes to adhere to self-care<sup>(10)</sup>. There is, however, a consensus in the literature that changes of attitude that occur during educational processes can improve quality of care and reduce direct and indirect costs in health<sup>(1,11)</sup>.

Based on the above, this study aimed to verify the knowledge and attitudes of people with diabetes mellitus who were attending an educational program on diabetes self-care.

## METHOD

This descriptive cross-sectional study was conducted in a research and community services center at a university in a city in the interior of São Paulo, Brazil between March and November 2007. This center was chosen because a multiprofessional team composed of nurses, nutritionists, psychologists, physical educators and nursing and psychology undergraduate students care for people with diabetes. Every six months this center offers a program of diabetes education to about 48 people with diabetes. The number of participants is subject to the physical space and human resources available at the time.

The diabetes education program divides patients into groups of 12 because small groups favor good communication between patients and the work team. The four groups are simultaneously attended to every Tuesday by one the following specialties: nursing, nutrition, psychology and physical education. The program was based on the standards defined for

the development of educational programs to people with diabetes in the Americas<sup>(9)</sup>. To develop the program content, several teaching strategies were used: dramatization, role-playing, group dynamics, and the sharing of experiences, among others.

The sample of this exploratory study was composed of 82 adults with diabetes mellitus who were attending a diabetes self-care education program. A systematized script was developed considering the following sociodemographic variables: gender, age, schooling, marital status and occupation, and the following clinical variables: diagnosis and treatment. For data collection concerning knowledge and attitude the Portuguese versions of the Diabetes Knowledge Questionnaire (DKN-A) and Diabetes Attitude Questionnaire (ATT-19) were used. These questionnaires were recently translated to Portuguese and validated in Brazil<sup>(12)</sup>. The following coefficients were found in the analysis of reliability and test-retest of instruments: Kappa coefficients varied from 0.56 to 0.69 for the DKN-A and from 0.45 to 0.60 for the ATT-19, which indicate a moderate level of reliability for both. Thus, the instruments presented adequate reliability to be used in the study. The internal consistency index, Cronbach's alpha, found in this study was 0.72 for the DKN-A and 0.79 for the ATT-19. These are considered adequate internal consistency levels.

The DKN-A is a self-applied questionnaire with 15 multiple-choice questions about different aspects related to diabetes general knowledge. It presents four broad categories: basic physiology, including how insulin acts; hypoglycemia; groups of foods and their replacements; management of diabetes in case of some other disease; and general principles in the disease care. The scale is 0-15 and for each item a score of 1 is attributed for correct answers and 0 for incorrect answers. Items 1 to 12 present a single correct answer, whereas items 13 to 15 present some correct answers and all of them have to be checked so as to obtain a score of 1. Scores higher than eight indicate the patient has knowledge concerning diabetes.

The ATT-19 is also a self-applied questionnaire and measures psychological adjustment to diabetes mellitus. It was developed to meet the need to evaluate the disease's psychological and emotional aspects and is composed of 19 items that include six factors: stress associated with diabetes mellitus; receptivity to the treatment; trust in the treatment; personal efficacy; perception of health and social

acceptance. Questions 11, 15 and 18 have an inverse score. The main application of the scale of attitude is to the evaluation of educational interventions. Each answer is measured by a five-point Likert item (totally disagree – score 1 up to totally agree – score 5). Total score varies from 19 to 95 points. Scores higher than 70 indicate a positive attitude toward the disease.

To obtain data regarding sociodemographic and clinical variables and also variables related to knowledge and attitude, a face-to-face interview was carried out with an average duration of 30 minutes. First, the researcher clarified the study objectives and then each participant signed the free and informed consent agreement. Interviews were individually conducted in a private room. Answers were simultaneously recorded in the form itself during the interviews.

A database was developed and validated by double entry. Divergent data were corrected. Data were analyzed in the SPSS Program 11.5 and results were presented through descriptive statistics. The project was approved by the Research Ethics Committee at the University of São Paulo at Ribeirão Preto, Brazil, Protocol No. 0773/2007.

## RESULTS

The majority of participants were female (64.6%) with an average age of 61.28 years (SE=11.37), married (68.3%); 69.5% were retired or homemakers; 35.4% of the participants had up to eight years of education, 47.6% had nine to 12 years and 9.8% had more than 12 years of education. It is worth mentioning that 7.3% did not have formal education. In addition, the majority of participants (58.5%) reported that they followed the prescribed diet and took oral anti-diabetic drugs to control the disease.

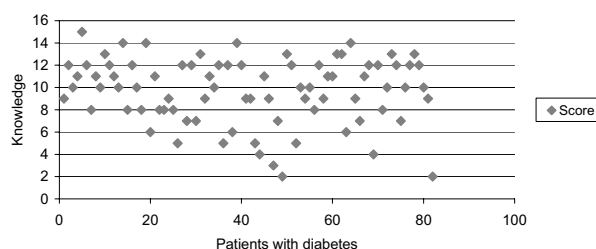


Figure 1 - Scores obtained by participants with diabetes in the questionnaire DKN-A in relation to knowledge of the disease

The dispersion of scores obtained in the DKN-A questionnaire in relation to people's knowledge of diabetes is observed in Figure 1. The majority (78.05%) obtained scores higher than eight on diabetes knowledge, which indicates good knowledge and understanding of diabetes safe-care. Similar levels of correct answers were found between males (65.05%) and females (64.40%). In terms of education, the highest scores are correlated with up to 12 years of schooling for men, and 12 or more years of schooling for women.

We observed that the highest levels of correct answers corresponded to the questions concerning hypoglycemia and the lowest rates were obtained for questions related to the management of diabetes in the interoccurrence of another disease.

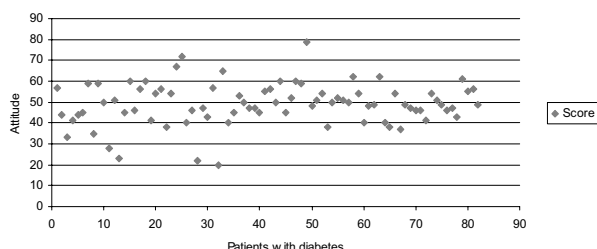


Figure 2 – Scores obtained by participants with diabetes on the questionnaire ATT-19 in relation to attitudes for coping with the disease

Figure 2 shows the dispersion of scores obtained by patients with diabetes in the questionnaire ATT-19 in relation to coping attitudes. The ATT-19 scores varied from 25 to 71 points, whereas its minimum score is 19 points and maximum score is 95 points. Scores higher than 70 indicate positive attitudes toward the disease. These results suggest that although the participants presented good levels of knowledge, they did not present a change of attitude, that is, they did not acquire a positive attitude so as to cope with the disease. Women (52.07%) displayed more positive attitudes toward the disease than men (50.70%).

It is also worth mentioning that the participants with lower levels of education, both genders, obtained higher scores in the ATT-19 questionnaire indicating better coping.

## DISCUSSION

The available scientific knowledge concerning diabetes mellitus is acknowledged as an important

resource to guide multiprofessional teams in the decision-making process related to the treatment of the disease and also to prepare the team to educate patients with diabetes to acquire knowledge and adhere to self-care. However, one has to distinguish between acquisition of knowledge and level of information. Knowledge is more than reproducing information – it presumes change of attitudes, behavior and life habits<sup>(13)</sup>.

This study explored the knowledge and attitude of people with diabetes who were attending a diabetes self-care education program. Results suggest that the majority of participants obtained a good level of knowledge concerning diabetes and strategies needed to adhere to self-care. These results are consistent with another study<sup>(14)</sup> reporting that an educative program on diabetes improves knowledge of diabetes and acquisition of self-care abilities. Although this is a non-experimental, descriptive and cross-sectional study, its results are consistent with a recent quasi-experimental study that revealed increased knowledge of patients with diabetes after a 12-month program of diabetes education<sup>(15)</sup>.

In relation to attitude as evaluated by the ATT-19, we observed that the majority presented scores below 70 points, which indicate that they did not acquire a positive attitude toward changes expected in life style so as to obtain good metabolic control. However, one has to take into account that knowledge does not always lead to change of attitudes toward the daily demands the treatment imposes on patients' routine.

Another study that investigated seven factors related to attitude - need of education, patient's adherence, severity of the disease, relation of levels of blood glucose, diabetes complications, the impact of diabetes on the patient's life, patient's autonomy and health team – revealed that the highest divergence was related to the need to train health professionals<sup>(16)</sup>.

Another study evaluating attitudes toward the disease of 531 individuals—252 health professionals and 279 people with diabetes—also showed significant differences in the attitude of health professionals and patients toward diabetes<sup>(17)</sup>. Both groups agreed on the severity of type 2 diabetes, the value of strict glycemic control and the disease's psychosocial impact, but disagreed on patient's autonomy. This study also showed that no significant differences were found between people with type 1 and type 2 diabetes regarding the severity of the disease. Also, both people

with type 1 and type 2 diabetes, who had had previous experience in diabetes education, presented high scores for coping with the disease<sup>(17)</sup>.

The findings of a third study are also in agreement with the results presented above. It compared attitudes of patients with type 2 diabetes with those of health professionals in relation to the management of diabetes and it showed that patients' attitudes and opinions are determinant in the care and control of the disease. Hence, attitudes toward diabetes are closely related to the behavior health professionals adopt during care delivery. Health professionals consider type 2 diabetes more severe and important than patients do. Nurses and nutritionists were considered to be the professionals who should most encourage patients to make their own decisions on the daily treatment of diabetes, considering their closeness to patients and time spent during nursing and nutrition consultations<sup>(18)</sup>.

Considering that the study participants attended the program of education in diabetes offered by a competent multiprofessional team and obtained scores that suggest acquisition of knowledge of the main aspects needed to manage the disease, more investment is needed in strategies capable of strengthening positive attitudes toward the demands imposed by diabetes on daily life. However, the participants' scores of attitude were not evaluated before starting the program and it represents one of the study limitations because we cannot empirically conclude whether the program contributed to the improvement of the participants' psychological adjustment to the disease, which is related to self-care.

New educational strategies are needed so as to enable people with diabetes to obtain knowledge to manage the disease and also to incorporate this knowledge in their daily routine, that is, knowledge can transform peoples' attitude toward the disease. Thus, one has to take into account patients' particularities in relation to complaints, i.e. medications' side effects and signs and symptoms of hypoglycemia, which oftentimes are neither described in scientific literature nor in reports of people with diabetes.

Diabetes significantly changes the relationship patients have with their own bodies and with the world that surrounds them and restrictions on eating habits make them more aware of their limitations. That is why the conflict between the desire to eat and the

imperious need to refrain from such desire is always present in the daily life of people with diabetes. This conflict might be an important element in understanding the participants' low scores obtained in relation to positive attitudes to cope with the disease.

Health professionals are interested and concerned with patients achieving the goals of metabolic control but do not always take into account what patients say, feel or do. Hence, caregivers need to be more sensitive to patients' non-expressed and expressed complaints so that the clinical decision is shared with a view to strengthen the professional-patient bond, which is essential to acquire and maintain positive attitudes. Suspicions in relation to certain aspects of the treatment can trigger behaviors that impede the maintenance of metabolic control. These behaviors are related to a set of values and assumptions adopted by the person with diabetes and which modulate acquired knowledge<sup>(2,10,15)</sup>.

The role of the multidisciplinary team is to identify constraining beliefs held by people with diabetes and which hinder their capacity to seek solutions for their problems<sup>(10,15)</sup>. An interesting coping strategy is to reinforce facilitating beliefs and attitudes, that is, those that can strengthen trust in the team, which results in a less ambivalent behavior toward the treatment. Additionally, the multiprofessional team should value the support participants receive from their partners, neighbors and friends. Valuing this support can strength positive attitudes with a view to modify behavior toward the treatment. Support systems offered by multiprofessional teams and the exchange of experiences with other people with the same disease and who face similar difficulties are believed to be determining factors in changing patients' behavior<sup>(2,10,15)</sup>.

This study has methodological limitations. Because this is a descriptive and cross-sectional study, it does not allow one to make inferences regarding the effect of the educative program on the acquisition of knowledge and participants' change of attitude or yet to make generalizations to other populations of people with diabetes mellitus. Data were collected in a single educative center at a university, which is probably distinct from other centers, clinics or outpatient facilities that deliver care to people with diabetes mellitus. Despite these limitations, the results of this study provide important support to the evaluation of the clinical practice of care delivered to people with diabetes mellitus as well as for designing

future studies with other methods and a larger number of participants.

## CONCLUSION

Despite the participants' good score for knowledge of diabetes and self-care, attitudes did not change toward more adequate coping strategies. We reinforce the need to continuously evaluate diabetes

education programs so as to redirect educational strategies to be meaningful for people with the disease, enhance their readiness for learning and consequently reinforce positive attitudes to cope with the disease. It is important to highlight that the scarcity of scientific literature in Brazil with which to perform a comparative analysis hindered the understanding of the implications of the obtained results for the reality in Brazil. Therefore, further research is needed so as to enable future comparisons.

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